CLAIMS

1. High-temperature sensor comprising a metallic protective tube (8) and a measuring resistance (1) surrounded by a ceramic powder (6) and connected to an electric cable,
characterized in that

- the measuring resistance (1.1) is connected to the electric cable by means of stress-relieved measuring resistance connection wires (1.2) and internal conductors (4), whereby said internal conductors (4) are provided with a solid and/or flexible insulation consisting of a ceramic material,
- said measuring resistance (1) and said internal conductors (4) are arranged in said metallic protective tube (8), which exhibits a taper (8.1) in the vicinity of said measuring resistance (1) and
- said ceramic powder (6) contains admixtures of oxygen-giving oxide compounds.

2. High-temperature sensor according to claim 1, characterized in that said ceramic powder (6) is aluminum oxide or magnesium oxide, which a volume of oxygen-giving metallic or inorganic non-metallic redox agents is respectively added to depending on the clear air volume in said sensor's interior.

3. High-temperature sensor according to one of the claims 1 or 2, characterized in that at least one auxiliary component (21) is partially or entirely arranged in said protective tube (8), whereby said auxiliary component (21) exhibits a

greater expansion coefficient than said protective tube (8).

4. High-temperature sensor according to one of the preceding claims, characterized in that said auxiliary component (21) is an intermediate jacket consisting of aluminum.

5. High-temperature sensor according to one of the preceding claims, characterized in that said ceramic powder (6) contains additions of a powder exhibiting a well greater volume expansion coefficient than the aluminum oxide ort he magnesium oxide.

6. High-temperature sensor according to claim 5, characterized in that said ceramic powder (6) is placed in layers in said protective tube (8), whereby aluminum oxide is arranged in the measuring tip containing said measuring resistance, whereby a mixture of aluminum oxide and oxygen-giving oxide compounds is arranged in the middle part of the arrangement and whereby a mixture of aluminum oxide, a powder with a greater volume expansion coefficient and oxygen-giving oxide compounds are arranged in the cable connection part adjacent to the middle part.

7. High-temperature sensor according to one of the preceding claims, characterized in that said ceramic insulation is a ceramic fiber material containing saffil fibers.

8. High-temperature sensor according to one of the preceding claims, characterized in that said measuring resistance (1) is arranged in a ceramic saggar jacket (1.3).

9. High-temperature sensor according to one of the preceding claims, characterized in that the internal conductors (4) are constructed as wires and

enclosed with an insulating hose (23) consisting of ceramic or glass-ceramic material and cemented together in the saggar jacket (1.3).

10. High-temperature sensor according to one of the preceding claims, characterized in that said measuring resistance (1.1) is arranged in a ceramic saggar jacket (1.3) being so long that it ranges beyond the joint (3) of the measuring resistance connection wires (1.2) to internal conductors (4) with their own ceramic insulation or to internal conductors (4.1) of a jacketed cable (5) and that the space between the measuring resistance (1.1) with the measuring resistance connection wires (1.2) and the saggar jacket (1.3) is filled with a high-temperature cement (26).

11. High-temperature sensor according to one of the preceding claims, characterized in that the measuring resistance (1.1) is a platinum thin film measuring resistance.

12. High-temperature sensor according to one of the preceding claims, characterized in that a minerally insulated jacketed cable (5) is welded on the protective tube (8), whereby the welded joint is situated outside the part of the sensor, which is in touch with the medium but directly behind the process adapter.

13. High-temperature sensor according to one of the preceding claims, characterized in that the process adapter contains a collar welded on the protective tube (8), which can be attached to the object under test using detachable connective means.

14. High-temperature sensor according to one of the preceding claims, characterized in that a ceramic saggar jacket (1.3) is pulled over the measuring resistance (1.1) and the joint (3) of the sensor connection wires (1.2) to the

protruding parts of the internal conductors (5.1) of a jacketed cable (5) in such a way that the ceramic saggar jacket (1.3) extends to the end of the external tube (5.1) of the jacketed cable (5) or slightly projects under the external tube (5.1) of the jacketed cable (5), whereby the ceramic saggar jacket's (1.3) interior is filled with high-temperature cement (26) thus forming a one-piece assembly.

15. High-temperature sensor according to claim 14, characterized in that a highly temperature-proof plastic injection-molded fitting (17) is arranged betweeen the jacketed cable (5) and the connecting cable (14) with the internal joint (13) or between the end of the protective tube (8) and the connecting cable (14) with the internal joint (13).

16. High-temperature sensor according to one of the preceding claims, characterized in that components with high expansion coefficients and partially highly oxidized surfaces, which compensate the relative decrease of the volume occupied by the ceramic powder (6) at rising temperatures against the protective tube's interior and which release oxygen from the pre-oxidized surface to the protective tube's interior.

17. High-temperature sensor according to claim 14, characterized in that the components consist of a fill of metallic and/or inorganic non-metallic grains, which are heavily pre-oxidized and exhibit a relatively high expansion coefficient compared to the protective tube (8).

18. High-temperature sensor according to one of the preceding claims, characterized in that the interior conductors (4) are formed as profiled interior conducting sheets (7) whose ends have tube-shaped ceramic formed parts (20.1, 20.2) with profiled interior and/or exterior outlines pulled over, whereby the interior conducting sheets (7) are welded on the measuring resistance (1.1)

and the measuring resistance (1) as well as the joint (3) are covered with a ceramic saggar jacket (1.3) filled with high-temperature cement (26).

19. High-temperature sensor according to claim 18, characterized in that the arrangement is enclosed by a protective tube (8) filled with a ceramic powder (6) containing oxygen-giving oxides, whereby the protective tube exhibits a bigger inner diameter in its part remote from the measuring resistance in a way that metal rings (28) with high expansion coefficients are arranged around the ceramic formed parts (20.1, 20.2) and whereby obvious die gaps exist between the ceramic formed parts (20.1, 20.2) and the metal rings (28).

20. High-temperature sensors according to one of the preceding claims, characterized in that the protective tube (8) is implemented as a deep drawn piece with a formed sealing collar (10) or as a turning workpiece with a deep drill-hole.

21. High-temperature sensor according to one of the preceding claims, characterized in that the interior conductors (4) exhibit an expansion compensation in the protective tube (8).